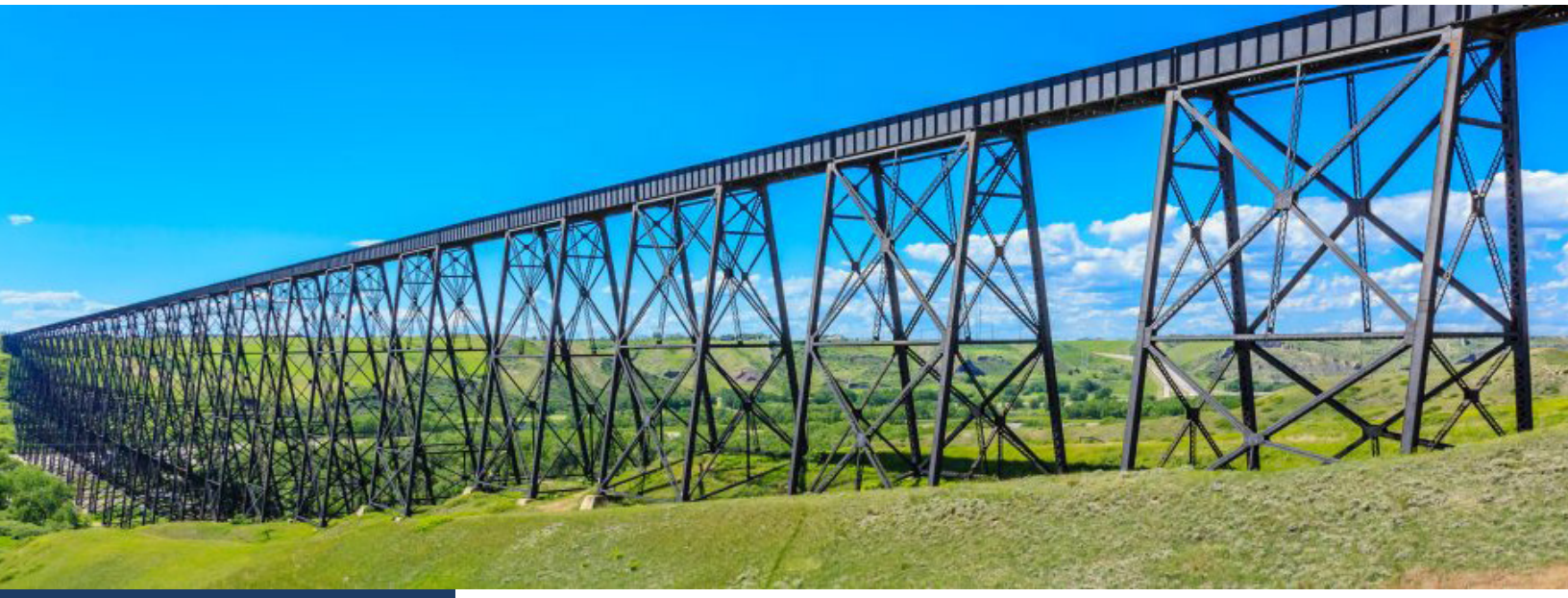


CITY OF Lethbridge

Industry
Government, public works

Location
Lethbridge, Alberta

Focus
Electrical utilities
Resource management

Solution
- CTM-ONE
- Cypress IOT

Category
Remote industrial

Powering up reliability: City of Lethbridge's journey to a resilient grid

The City of Lethbridge Electric Utility (LEU) provides electricity to the residents and businesses across Lethbridge, Alberta. Its mission is to ensure reliable access to power for the entire community. LEU faced a big challenge: unreliable modems with its electrical infrastructure. After experiencing frequent communication dropouts, LEU sought a more robust solution. By switching to Cypress Solutions' CTM-ONE wireless gateways and the Cypress IOT device management solution, LEU has achieved exceptional uptime. The transition not only improved the reliability of their Supervisory Control and Data Acquisition (SCADA) and Advanced Metering Infrastructure (AMI) systems, but also positioned City of Lethbridge to accelerate future smart grid initiatives.

The challenge: overcoming modem failures

LEU depends on a robust communication network to manage its grid. This includes remote terminal units (RTUs) in their 15kV distribution switching cubicles and AMI gatekeeper systems. This infrastructure is crucial for real-time monitoring and control, especially during power restoration events.

Initially, the City used cellular gateways from another vendor for data transmission over a private access point name (APN). However, these modems proved unreliable. The main issue was high-temperature failures, particularly during Lethbridge's hot

summers. Housed in sealed, watertight steel enclosures, the modems would frequently overheat, leading to communication dropouts or complete failures. The impact was significant:

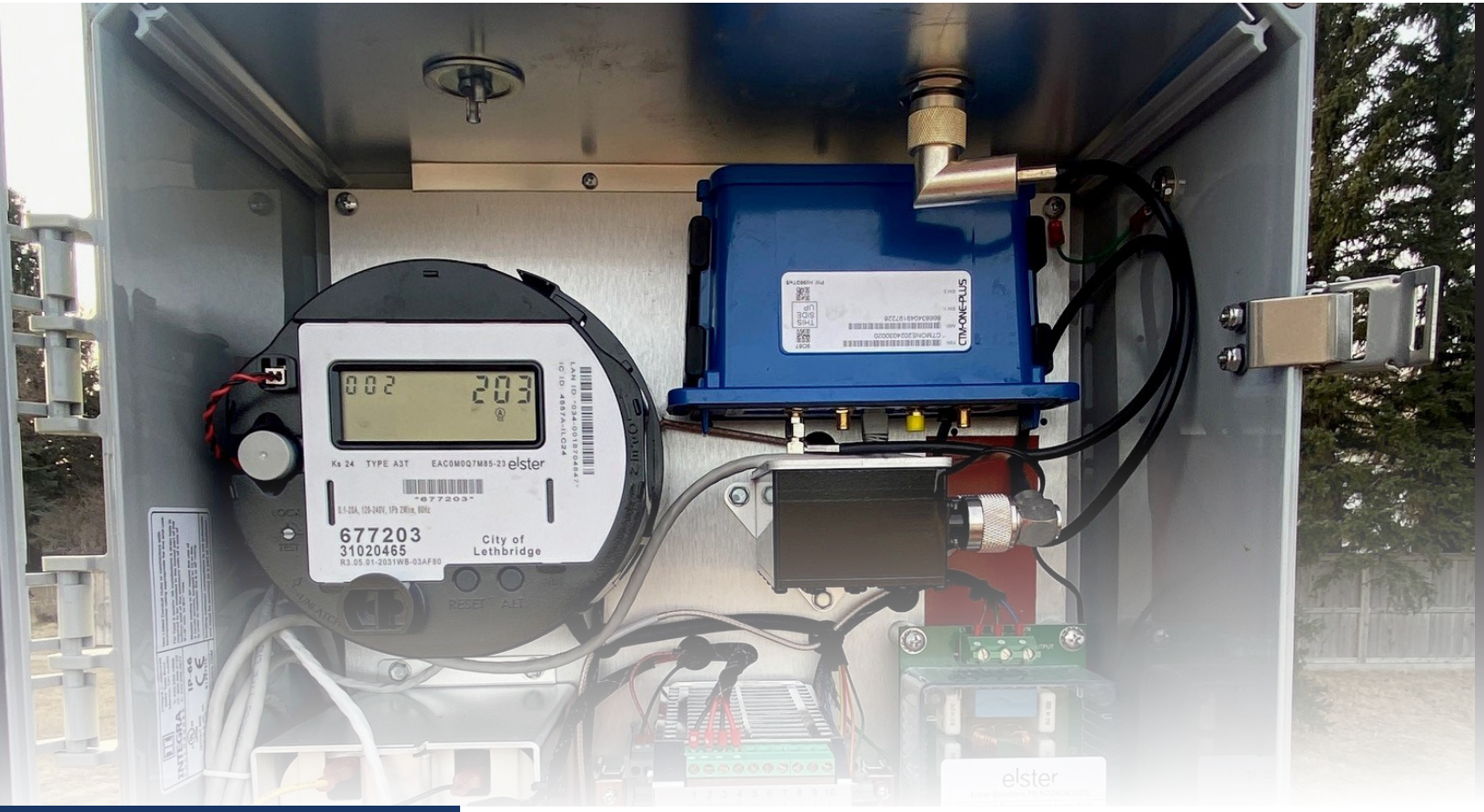
- **Delayed outage response** - during restoration events, operators could not trust the live data, forcing them to send field crews to manually verify operations, slowing recovery.
- **Reduced AMI efficiency** - unreliable communication from gatekeepers meant the AMI system could not accurately report meter data or outages, undermining the key benefits of automated metering.

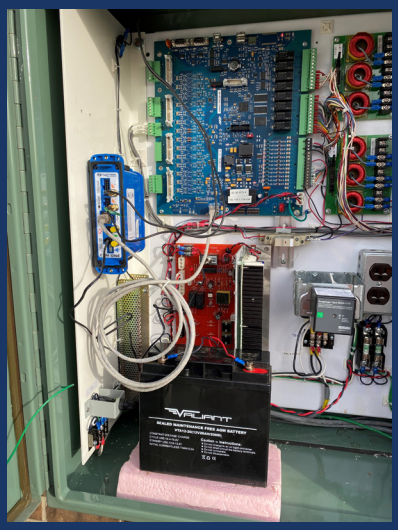
Bryce Kelly, City of Lethbridge's Substation and Metering Manager, and his team realized they needed a replacement solution that was rugged, reliable, and simple to manage.

When asked about key requirements, Bryce identified "There were three things we were looking for: a rugged hardware that can withstand high heat, reliable uptime with no dropouts, and simplicity."

The solution: reliable connectivity from a trusted source

The solution came from an unexpected source. Bryce recalled "One of our team members used to work with police, fire, and EMS. He mentioned that Cypress modems were used in the ambulances. If they could survive that environment, they could work for us. So we looked you up online and reached out."





CTM-ONE inside a RTU cabinet

CTM-ONE inside a gatekeeper enclosure, pole-mounted

LEU started by testing six CTM-ONE units in their most challenging sites - three in switching cubicles and three in gatekeepers. The results were immediate and positive. Over a full summer of high heat (35-40°C), the modems maintained 100% uptime with zero dropouts. This successful trial allowed the team to move forward with a full-scale deployment.

The application setup was straightforward. Modems were installed inside RTU cabinets and gatekeeper enclosures (pole-mounted), connected via Ethernet or RS-485. A standout feature was the CTM-ONE's dual SIM support. This allowed LEU to use private APNs from both of their mobile network operators, ensuring network redundancy and eliminating a single point of failure.

Managing devices with Cypress IOT

Alongside the hardware, LEU also adopted the Cypress IOT platform for device management. This centralized solution allows their Operational Technology (OT) team to:

- **Monitor device status** - track device connectvitiy in real time.
- **Manage inventory** - access a clear overview of all devices, IP addresses, and SIM cards.
- **Streamline troubleshooting** - uses alarms and an intuitive dashboard to quickly identify and pinpoint issues.

The result: a grid transformed

Since deploying the CTM-ONE modems, the City has seen measurable improvements:

1. **Up to 100% reliability** - the most significant result has been the elimination of communication dropouts. Control room operators now have complete trust in the data.
2. **Faster outage response** - with reliable, real-time data, crews no longer need to be dispatched to manually validate operations. This reduces time to locate faults from hours to minutes, cutting downtime for customers.
3. **Improved metering** - for the AMI system, the high uptime allows the team to detect outages quickly through the system's automated ping-back feature.
4. **Reduced troubleshooting** - The OT and field teams no longer waste time diagnosing unreliable modems. If an issue arise, they can quickly focus on the RTU or other field equipment, reducing labor hours and maintenance costs.

Bryce stated further "The OT team is very happy with our choice. The Engineering team gets the results when they need to. Regarding Cypress IOT, the platform is very well laid-out, the guys always have the dashboard on their screen and so they know exactly which devices are checking in and which are offline."

"Once we tried Cypress modems, things changed. We started with 20 units in our worst locations and had zero dropouts in six months. That gave us confidence to keep rolling them out. Reliability was key — our control room depends on live, accurate data during power restoration events."

- **Bryce Kelly, Substation and Metering Manager**

What's next

To date, the City has deployed more than 30 CTM-ONE devices, with plans to replace all older inventory. They are also planning to expand the use of the CTM-ONE into new applications, such as fault indicator systems for both overhead and underground feeders, further enhancing their grid's reliability and resilience.

The partnership with Cypress Solutions has equipped the City of Lethbridge Electric Utility with a rugged, reliable, and simple connectivity solution that has transformed their grid operations, positioning them for a smarter, more efficient future.

For more information, please visit https://www.lethbridge.ca/utilities/electric/

Find out how Cypress Solutions can help your business operations.

Visit **www.cypress.bc.ca** or email **info@cypress.bc.ca**

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